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FILE 'BIOSIS' ENTERED AT 17:46:42 ON 15 AUG 2006
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=> s chitosan (10a) tyrosin?
L1          138 CHITOSAN (10A) TYROSIN?

=> s l1 (p) protein
L2           26 L1 (P) PROTEIN

=> dup rem l2
PROCESSING COMPLETED FOR L2
L3           23 DUP REM L2 (3 DUPLICATES REMOVED)

=> d l3 bib ab 1-23

L3   ANSWER 1 OF 23  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2006:512961  CAPLUS <<LOGINID::20060815>>
DN   145:9952
TI   Method for processing organic matter containing chitin using supercritical
     acidic aqueous solution
IN   Yoshida, Hiroyuki; Nakamura, Hidemi
PA   Osaka Industrial Promotion Organization, Japan
SO   PCT Int. Appl., 30 pp.
     CODEN: PIXXD2
DT   Patent
LA   Japanese
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
     ---------------     ----   --------    -------------------    --------
PI   WO 2006057398        A1     20060601    WO 2005-JP21845        20051129
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,
             CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
             GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR,
             KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX,
             MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE,
             SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC,
             VN, YU, ZA, ZM, ZW
         RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,
             IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ,
             CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH,
             GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
             KG, KZ, MD, RU, TJ, TM
PRAI JP 2004-343654       A      20041129
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AB The method includes a step of using an acidic aq. soln. (AcOH) in the subcrit. or supercrit. state to produce a low mol. wt. chitin or a chitin oligosaccharide. Further disclosed is a method for producing a chitosan, a low mol. wt. chitosan or a chitosan oligosaccharide which includes deacetylation of the resulting chitin or oligosaccharide. Still further disclosed is a method for producing a chitin degrdn. product and/or a protein degrdn. product which includes a step for processing an org. matter contg. a chitin in an acidic aq. soln. in the subcrit. or supercrit. state.

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 2 OF 23 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
AN 2006:359193 BIOSIS <<LOGINID::20060815>>
DN PREV200600353318
TI Tyrosine-based "activatable pro-tag": Enzyme-catalyzed protein capture and release.
AU Lewandowski, Angela T.; Small, David A.; Chen, Tianhong; Payne, Gregory F.; Bentley, William E. [Reprint Author]
CS Univ Maryland, Ctr Biosyst Res, Inst Biotechnol, 5115 Plant Sci Bldg, College Pk, MD 20742 USA
bentley@eng.umd.edu
SO Biotechnology and Bioengineering, (APR 20 2006) Vol. 93, No. 6, pp. 1207-1215.
CODEN: BIBIAU. ISSN: 0006-3592.
DT Article
LA English
ED Entered STN: 19 Jul 2006
Last Updated on STN: 19 Jul 2006

AB ***Protein*** recovery is often achieved by a series of capture and release steps that often involve chromatographic binding and elution. We report an alternative, non-chromatographic, capture and release approach that employs enzymes and the stimuli-responsive polysaccharide chitosan. We capture our ***protein*** using the enzyme tyrosinase that oxidizes accessible tyrosine residues of the ***protein*** and "activates" these residues for covalent capture (i.e., conjugation) onto chitosan. Using fusions of green fluorescent ***protein*** (GFP) we observed that: (i) enzymatic activation is required for ***protein*** capture to chitosan; and (ii) capture is enhanced (approximately five-fold) by engineering the ***protein*** to have a penta-tyrosine fusion tag that provides additional accessible tyrosine residues for enzymatic activation. Because the fusion tag appears to be the primary site for capture, and capture requires activation, we designate penta- ***tyrosine*** as a "pro-tag." The captured GFP- ***chitosan*** conjugate possesses the pH-responsive solubility that is characteristic of chitosan. We exploit this pH-responsive solubility to facilitate purification of the captured ***protein*** . Two enzymatic methods were explored to release the captured GFP from the chitosan conjugate. The first method employs enterokinase (EK) to cleave the ***protein*** at an engineered EK-cleavage site. The second method employs chitosanase to hydrolyze the chitosan backbone. Using GFP as a model ***protein*** , we demonstrated that enzymatic capture and release provides a simple, non-chromatographic means to recover proteins directly from cell lysates. (c) 2006 Wiley Periodicals, Inc.

L3 ANSWER 3 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2006:174159 CAPLUS <<LOGINID::20060815>>

DN 144:291503
TI Chitosan-Whey Protein Edible Films Produced in the Absence or Presence of Transglutaminase: Analysis of Their Mechanical and Barrier Properties
AU Di Pierro, Prospero; Chico, Belkis; Villalonga, Reynaldo; Mariniello, Loredana; Damiao, Angelo E.; Masi, Paolo; Porta, Raffaele
CS Dipartimento di Scienza degli Alimenti, Universita' di Napoli Federico II, Naples, 80055, Italy
SO Biomacromolecules (2006), 7(3), 744-749
CODEN: BOMAF6; ISSN: 1525-7797
PB American Chemical Society
DT Journal
LA English
AB Chitosan-whey protein edible films with different protein concns. were prepd. in the absence or presence of microbial transglutaminase as crosslinking agent. The films prepd. in the presence of the enzyme showed low soly. at a wide range of pH, a lower degree of swelling, and good biodegradability following protease treatments. The presence of transglutaminase induced also an enhancement in film mech. resistance and a redn. in their deformability. Finally, the barrier efficiency toward O2 and CO2 was found to be markedly improved in the cross-linked films which showed also a lower permeability to water vapor. Some potential practical applications of transglutaminase-treated chitosan-whey protein films are suggested.
RE.CNT 48 THERE ARE 48 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 4 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:1325723 CAPLUS <<LOGINID::20060815>>
DN 144:94327
TI Recombinant yeasts microencapsulated by alginate-polylysine/chitosan-alginate for secreting protein medicines in vivo
IN Ma, Xiaojun; Yu, Weiting; Xiong, Ying
PA Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Peop. Rep. China
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 8 pp.
CODEN: CNXXEV
DT Patent
LA Chinese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 1589777	A	20050309	CN 2003-155728	20030901
PRAI	CN 2003-155728		20030901		

AB The yeast microcapsules disclosed in this invention have a particle size of 100-1000 .mu.m, and contain yeast suspensions (106-1010 cell/mL) and polylysine/chitosan as microcapsule shells. With the protection of microcapsule shells, the yeasts will not be damaged in gastrointestinal tract, and the microcapsules can specifically adhere to the mucous membrane of small intestine for over 10 h. The microcapsule shells have controlled release effect on protein drugs secreted by yeasts with a mol. wt. of 10-150 kDa. The microencapsulated yeasts can be used to treat uremia, liver failure, phenylketonuria, endocrine disorders, neurodegenerative diseases, hereditary diseases and malignant tumors.

L3 ANSWER 5 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:1323871 CAPLUS <<LOGINID::20060815>>
DN 144:94326
TI Recombinant yeasts microencapsulated by alginate-chitosan-alginate for secreting protein medicines in vivo
IN Ma, Xiaojun; Yu, Weiting; Xue, Weiming
PA Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Peop. Rep. China
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 8 pp.
CODEN: CNXXEV
DT Patent
LA Chinese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 1589776	A	20050309	CN 2003-155727	20030901
PRAI	CN 2003-155727		20030901		

AB The yeast microcapsules disclosed in this invention have a particle size of 100-1000 .mu.m, and contain yeast suspensions (106-1010 cell/mL) and chitosan as microcapsule shells. With the protection of microcapsule shells, the yeasts will not be damaged in gastrointestinal tract, and the microcapsules can specifically adhere to the mucous membrane of small intestine for over 12 h. The microcapsule shells have controlled release effect on protein drugs secreted by yeasts with a mol. wt. of 10-150 kDa. The microencapsulated yeasts can be used to treat uremia, liver failure, phenylketonuria, endocrine disorders, neurodegenerative diseases, hereditary diseases and malignant tumors.

L3 ANSWER 6 OF 23 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
AN 2005:508744 BIOSIS <<LOGINID::20060815>>
DN PREV200510308775
TI Biomimetic approach to biomaterials: Amino acid-residue-specific enzymes for protein grafting and cross-linking.
AU Chen, Fianhong; Small, David A.; McDermott, Martin K.; Bentley, William E.; Payne, Gregory F. [Reprint Author]
CS Univ Maryland, Inst Biotechnol, Ctr Biosyst Res, 5115 Plant Sci Bldg, College Pk, MD 20742 USA
payne@umbi.umd.edu
SO Cheng, HN [Editor]; Gross, RA [Editor]. ACS Symp. Ser., (2005) pp. 107-118. ACS Symposium Series.
Publisher: AMER CHEMICAL SOC, 1155 SIXTEENTH ST NW, WASHINGTON, DC 20036 USA. Series: ACS SYMPOSIUM SERIES.
Meeting Info.: Symposium on Polymer Biocatalysis and Biomaterials held at the 2003 ACS National Meeting. New York, NY, USA. 200309,. Amer Chem Soc.
CODEN: ACSMC8. ISSN: 0097-6156. ISBN: 0-8412-3917-7(H).
DT Book; (Book Chapter)
Conference; (Meeting)
LA English
ED Entered STN: 23 Nov 2005
Last Updated on STN: 23 Nov 2005
AB Nature creates a range of functional materials using proteins and polysaccharides as starting materials, and enzymes as assembly catalysts. Inspired by nature, we are examining how proteins and polysaccharides can be enzymatically assembled into conjugates and crosslinked networks. Specifically, we used ***tyrosinase*** to conjugate proteins to the polysaccharide ***chitosan** , and a microbial transglutaminase to catalyze ***protein*** crosslinking. We review results from our studies and suggest how the unique properties of the resulting biomaterials can be exploited in medical applications.

L3 ANSWER 7 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:1140271 CAPLUS <<LOGINID::20060815>>
DN 144:101193
TI Amperometric biosensor based on tyrosinase-conjugated polysaccharide hybrid film: selective determination of nanomolar neurotransmitters metabolite of 3,4-dihydroxyphenylacetic acid (DOPAC) in biological fluid
AU Liu, Aihua; Honma, Itaru; Zhou, Haoshen
CS Energy Technology Research Institute, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, 305-8568, Japan
SO Biosensors & Bioelectronics (2005), 21(5), 809-816
CODEN: BBIOE4; ISSN: 0956-5663
PB Elsevier B.V.
DT Journal
LA English
AB The amperometric detection of neurotransmitters metabolite of 3,4-dihydroxyphenylacetic acid (DOPAC) was achieved at a ***tyrosinase*** - ***chitosan*** composite film-modified glassy carbon (GC) electrode. The optimal conditions for the prepn. of the biosensor were established. This bio-composite film was characterized by SEM and Fourier transformed IR (FT-IR) spectra, suggesting that chitosan covalently connected to chitosan chains. Electrochem. characterization of the bio-hybrid membrane-covered electrodes were also performed in 0.05 M phosphate buffer soln. (pH 6.52) contg. neurotransmitters or their derivs. by using cyclic voltammetry (CV), linear sweep voltammetry (LSV), square wave voltammetry (SWV) and amperometry. This simply-prepd. ***protein*** -polysaccharide hybrid film provides a microenvironment friendly for enzyme loading. The sensor was operated at -0.15 V with a short response time. The current linearly increased with the increasing concn. of DOPAC over the concn. of 6 nM-0.2 mM. The lower detection limit for DOPAC is 3 nM (S/N = 3). The sensitivity of the sensor is 40 .mu.A mM-1. A physiol. level of neurotransmitters and their derivs. including dopamine, L-dopa, adrenaline, noradrenaline and homovanillic acid as well as ascorbic acid, uric acid and acetaminophen do not affect the detn. of DOPAC.
RE.CNT 47 THERE ARE 47 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 8 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:436624 CAPLUS <<LOGINID::20060815>>
DN 143:114104
TI Structure modifications induced in silk fibroin by enzymatic treatments. A Raman study
AU Monti, Patrizia; Freddi, Giuliano; Sampaio, Sandra; Tsukada, Masuhiro; Taddei, Paola
CS Dipartimento di Biochimica 'G. Moruzzi', University of Bologna, Bologna, 40126, Italy
SO Journal of Molecular Structure (2005), 744-747, 685-690
CODEN: JMOSB4; ISSN: 0022-2860
PB Elsevier B.V.
DT Journal
LA English
AB Raman spectroscopy was used to investigate various enzyme-catalyzed reactions onto silk fibroin, i.e. the biodegrdn. of Tussah (Antheraea pernyi) silk fibroin films by a proteolytic enzyme, the oxidn. of domestic (Bombyx mori) silk fibroin by mushroom ***tyrosinase*** and the subsequent grafting of ***chitosan*** onto oxidized silk. The spectra of Tussah silk fibroin films exposed to a bacterial protease for different times demonstrated that the cleavage of sensitive peptide bonds in the amorphous glycine-rich domains resulted in the loss of various amino acid residues (Tyr, Trp, Asp, etc.). The bands attributed to the cryst. alanine-rich sequences increased in intensity, and the .beta.-sheet mol. conformation was not affected by biodegrdn. Following oxidn. with mushroom tyrosinase, the tyrosine bands of Bombyx mori fibroin decreased in intensity but did not disappear. The increase of the I853/I829 intensity ratio indicated that the Tyr residues not accessible to the enzyme were located in a strongly hydrophobic environment. Raman spectroscopy provided evidence that chitosan was effectively grafted onto oxidized silk, probably via the Schiff-base mechanism, as shown by the behavior of the imine band at about 1646 cm-1. Grafting chitosan onto silk fibroin resulted in a .beta.-sheet.fwdarw.random coil conformational transition of the ***protein*** component in the bioconjugated product.
RE.CNT 52 THERE ARE 52 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 9 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:386360 CAPLUS <<LOGINID::20060815>>
DN 143:332132
TI Biomimetic approach to biomaterials: Amino acid-residue-specific enzymes for protein grafting and cross-linking
AU Chen, Fianhong; Small, David A.; McDermott, Martin K.; Bentley, William E.; Payne, Gregory F.
CS Center for Biosystems Research, University of Maryland Biotechnology Institute, College Park, MD, 20742-4450, USA
SO ACS Symposium Series (2005), 900(Polymer Biocatalysis and Biomaterials), 107-118
CODEN: ACSMC8; ISSN: 0097-6156
PB American Chemical Society
DT Journal; General Review
LA English
AB A review. Nature creates a range of functional materials using proteins and polysaccharides as starting materials, and enzymes as assembly catalysts. Inspired by nature, we are examg. how proteins and polysaccharides can be enzymically assembled into conjugates and crosslinked networks. Specifically, we used ***tyrosinase*** to conjugate proteins to the polysaccharide ***chitosan*** , and a microbial transglutaminase to catalyze ***protein*** crosslinking. We review results from our studies and suggest how the unique properties of the resulting biomaterials can be exploited in medical applications.
RE.CNT 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 10 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:206082 CAPLUS <<LOGINID::20060815>>
DN 141:179365
TI The effect of galectin 1 on 3T3 cell proliferation on chitosan membranes
AU Chang, Yu-Ying; Chen, Shiang-Jiuun; Liang, Huang-Chien; Sung, Hsing-Wen; Lin, Chien-Chung; Huang, Rong-Nan
CS Department of Life Science, National Central University, Taoyuan, 32054, Taiwan
SO Biomaterials (2004), 25(17), 3603-3611
CODEN: BIMADU; ISSN: 0142-9612
PB Elsevier Science Ltd.
DT Journal

LA English
AB Galectin-1 (GAL1), a .beta.-galactoside-binding protein, functions in cell adhesion, development, and growth regulation. A no. of studies suggest that GAL1 play an important role in enhancing cell adhesion to extracellular matrix and inducing cell proliferation. Chitosan is a deriv. of chitin extd. from lobsters, crabs and shrimps' exoskeletons. In clin. medicine, chitosan membrane had been used as a semi-permeable biol. dressing. Although chitosan membranes show no cytotoxicity, some cell types (e.g. 3T3 cells) fail to attach and proliferate on their surface. In these studies, we show that over-expression of GAL1 does not enhance 3T3 cell proliferation on chitosan membranes. However, coating the chitosan membrane with recombinant GAL1 proteins significantly expedites 3T3 cells proliferation. The enhanced cell growth was inhibited by thiodigalactoside (TDG, a potent inhibitor of .beta.-galactoside binding) and GAL1 monoclonal antibodies, suggesting GAL1's specific effect on the proliferation of 3T3 cells upon chitosan membranes. Moreover, immunoblotting detected a markedly suppressed tyrosine phosphorylation in several proteins on 3T3 cell growths upon GAL1-coated chitosan membrane. Pretreating the cells with sodium fluoride (NaF, a phosphatase inhibitor) inhibits the attachment and proliferation of 3T3 cells. These findings support a proposed role for altered levels of protein phosphorylation in GAL1-mediated cell attachment and proliferation on chitosan membranes.
RE.CNT 47 THERE ARE 47 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 11 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:657843 CAPLUS <<LOGINID::20060815>>
TI Enzymatic grafting and crosslinking for adding value to biopolymers
AU Payne, Gregory F.; Wu, Li Qun
CS Center for Biosystems Research, University of Maryland Biotechnology Institute, College Park, MD, 20742-4450, USA
SO Abstracts of Papers, 228th ACS National Meeting, Philadelphia, PA, United States, August 22-26, 2004 (2004), IEC-043 Publisher: American Chemical Society, Washington, D. C.
CODEN: 69FTZ8
DT Conference; Meeting Abstract
LA English
AB Biol. serves as a model for the construction of high performance and environmentally benign materials. Typically, these materials are constructed from proteins and polysaccharides through biocatalytic routes. We are examg. how enzymes can be exploited to graft side groups and side chains onto the polysaccharide chitosan. Specifically, natural phenols, peptides, and proteins can be grafted onto the ***chitosan*** backbone using the enzyme ***tyrosinase*** . These grafted polymers offer a variety of interesting properties. For instance, ***protein*** -chitosan conjugates have been obsd. to have pH-responsive properties characteristic of chitosan. Also, we are examg. the crosslinking of proteins using the enzyme transglutaminase. This enzyme is capable of converting ***protein*** -based solns. into three-dimensional hydrogel networks. Thus, enzymes can add value to renewable biopolymers by upgrading their functional properties.

L3 ANSWER 12 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:637351 CAPLUS <<LOGINID::20060815>>
TI Amino acid-residue-specific enzymes for protein grafting and crosslinking
AU Payne, Gregory F.; Chen, Tianhong; McDermott, Martin K.; Small, David A.; Bentley, William E.
CS Center for Biosystems Research, University of Maryland Biotechnology Institute, College Park, MD, 20742-4450, USA
SO Abstracts of Papers, 226th ACS National Meeting, New York, NY, United States, September 7-11, 2003 (2003), POLY-471 Publisher: American Chemical Society, Washington, D. C.
CODEN: 69EKY9
DT Conference; Meeting Abstract
LA English
AB We are examg. two enzymes with the goal of expanding the types of reactions that can be exploited for enzymic polymer modification. The first enzyme, tyrosinase oxidizes accessible tyrosyl residues of proteins. These residues are converted into reactive o-quinone residues that can undergo subsequent non-enzymic reactions. We use tyrosinase to "activate" proteins for grafting onto nucleophilic amines of the polysaccharide chitosan. ***Tyrosinase*** -initiated reactions between the ***protein*** gelatin and ***chitosan*** yield a gel network that has distinct mech. properties. Both gelatin and ***chitosan*** are integral to the behavior of the ***tyrosinase*** -catalyzed gelatin-***chitosan*** gel network. Tyrosinase was also used to graft the more compact Green Fluorescent ***Protein*** (GFP) onto chitosan. The resulting GFP-chitosan conjugate was fluorescent and had pH-responsive properties characteristic of chitosan. Thus, tyrosinase provides a means to generate ***protein*** -polysaccharide conjugates with hybrid properties. The second enzyme is a microbial transglutaminase that can crosslink proteins through lysyl and glutamyl residues. These covalent crosslinks are permanent and the gels do not melt with increasing temp. Initial studies demonstrate that transglutaminase can in situ entrap viable bacterial cells within a cross-linked gel network. In summary, tyrosinase and transglutaminase provide unique opportunities to generate biopolymer-based structures with distinct functional properties. We are currently examg. these materials for medical and biosensor applications.

L3 ANSWER 13 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:222533 CAPLUS <<LOGINID::20060815>>
DN 138:350728
TI Nature-inspired method for protein-polysaccharide conjugation
AU Chen, Tianhong; Small, David A.; Bentley, William E.; Payne, Gregory F.
CS Center for Biosystems Research, University of Maryland Biotechnology Institute, College Park, MD, 20742, USA
SO PMSE Preprints (2003), 88, 42-43
CODEN: PPMRA9; ISSN: 1550-6703
PB American Chemical Society
DT Journal; (computer optical disk)
LA English
AB Protein-polysaccharide conjugates were generated in vitro using tyrosinase to oxidize accessible Tyr residues of proteins into reactive o-quinone residues. Gelatin as well as green fluorescent protein (GFP) were conjugated to chitosan. Creation of some protein-chitosan conjugates was discussed to offer distinct mech. properties, which along with the biocompatible nature of gelatin and chitosan were supposed to have medical applications as scaffolds for tissue engineering and matrixes for controlled drug delivery.
RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 14 OF 23 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN

AN 2003:529923 BIOSIS <<LOGINID::20060815>>
DN PREV200300525636
TI A FIRST LOOK AT BIOPOLYMER HYDROGELS AS ADHESIVE MATERIALS IN THE RETINA.
AU Janjua, R. [Reprint Author]; Steidl, S. [Reprint Author]
CS Ophthalmology, University of Maryland School of Medicine, Baltimore, MD, USA
SO ARVO Annual Meeting Abstract Search and Program Planner, (2003) Vol. 2003, pp. Abstract No. 2980. cd-rom.
Meeting Info.: Annual Meeting of the Association for Research in Vision and Ophthalmology. Fort Lauderdale, FL, USA. May 04-08, 2003. Association for Research in Vision and Ophthalmology.
DT Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LA English
ED Entered STN: 12 Nov 2003
Last Updated on STN: 12 Nov 2003
AB Purpose: Natural polymers are advocated as biomaterials in several areas of medicine, as they are non-toxic and biocompatible with low immunogenicity. A potential area of use may be in the management of retinal holes or tears, selected retinal detachments, as well as in the placement of retinal prosthetic devices. As a preliminary study for use in the retina, two ***protein*** -polysaccharide combination gels were evaluated utilizing bovine aorta. More specifically, two enzymes, ***tyrosinase*** and transglutaminase, were used to catalyze the formation of gelatin/ ***chitosan*** hydrogels. Methods: One two-inch segment of bovine aorta was overlapped to another similar segment with tyrosinase-catalyzed hydrogel, transglutaminase-catalyzed hydrogel, and transglutaminase-catalyzed hydrogel + 10% gelatin. A commercially available cyanoacrylate, known to grossly adhere to bovine aorta, was also tested for comparison. The specimens were submerged under water for approximately two hours. Mechanical testing was performed on a computer controlled uniaxial test system: the BIMaTs (Biological Materials Testing System). This allowed for evaluation of the strength of the adhesive by application of a tangential load on the aorta-adhesive-aorta composite. Stress-strain curves were generated for each biopolymer hydrogel, as well as for the cyanoacrylate. Results: All enzyme-generated hydrogels showed potential adhesive properties. Considerable stress was applied to each before fracture of the aorta-adhesive-aorta composite. Of the biopolymer hydrogels, the transglutaminase-catalyzed hydrogel was able to withhold the most amount of stress. The addition of 10% gelatin to the composite conferred an increase in tensile or stretch properties, as the strain was greater given an equal amount of applied stress (load). Conclusions: The tyrosinase and transglutaminase generated hydrogels show promise in adhering to the bovine aorta. The various formulations of these hydrogels determine their different adhesive properties. At the present time, an equivalent BiMaTs system needs to be constructed that is adequate for measurement of the strength of these adhesives on a retina-adhesive-retina composite. This will allow further assessment of the potential use of biopolymer hydrogels as adhesive materials in the retina.

L3 ANSWER 15 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:553463 CAPLUS <<LOGINID::20060815>>
DN 139:392878
TI Bifunctional immobilization of tyrosinase on chitosan: use for the production of L-DOPA
AU Chao, An-Chong; Shyu, Shin-Shing; Mi, Fwu-Long
CS Laboratory of Polymer Materials Research, Department of Chemical and Materials Engineering, National Central University, Chung-Li, Taiwan, 320, Peop. Rep. China
SO Advances in Chitin Science (2002), 5, 439-447
CODEN: ACSCFF
PB National Metal and Materials Technology Center
DT Journal
LA English
AB In this research mushroom ***tyrosinase*** was immobilized on ***chitosan*** via the attachment with amino groups and/or hydroxyl groups to prep. L-dopa from L-tyrosine. Cyanuric chloride was used as the coupling agent for hydroxyl groups and enzymes, and amino groups were linked with enzymes by glutaraldehyde. The bifunctionally immobilized tyrosinase (assigned as GLCL) was found to have the highest ***protein*** immobilized yield and specific activity, but obtained the lowest activity yield. The hydroxylly immobilized tyrosinase (assigned as IMCL) had the highest activity yield and obtained better ***protein*** immobilized yield, better specific activity than that of the amino-attached tyrosinase (assigned as IMGL). These immobilized tyrosinases were found to have the same optimal acidity to prep. L-dopa at pH 5. The exptl. data shown sigmoidal curves for the prodn. of L-dopa and the best strategy to obtain the maximal prodn. of L-dopa is to regulate the reaction time. The inhibition of L-dopa to the conversion of L-tyrosine and the oxidn. of ascorbic acid by tyrosinase were found in our expts. There was no apparent loss of activity for immobilized tyrosinase after storing for 40 days at 4.degree., in 0.1 M, pH 7 phosphate buffer. The poisoning of the immobilized enzyme should mainly be responsible for the inactivation of GLCL and IMGL. The higher ***protein*** immobilized yield of GLCL than that of IMGL caused GLCL been less poisoned. The main reasons for huge inactivation of IMCL were the poisoning of enzyme and the dissolving of chitosan in the reaction buffer.
RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 16 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:232541 CAPLUS <<LOGINID::20060815>>
DN 136:295002
TI In vitro biochemical coupling to create protein-polysaccharide conjugates
AU Payne, Gregory F.; Chen, Tianhong; Embree, Heather D.
CS Center for Agricultural Biotechnology, Univ. of Maryland Biotechnology Inst., College Park, MD, 20742, USA
SO PMSE Preprints (2002), 86, 358
CODEN: PPMRA9; ISSN: 1550-6703
PB American Chemical Society
DT Journal; (computer optical disk)
LA English
AB A gelatin-chitosan conjugate was prepd. by adding tyrosinase to blends contg. gelatin and chitosan and incubation overnight at 35.degree.. The purified conjugate was analyzed by 1H NMR and FTIR. Phys. evidence for conjugation was obtained using rheol. measurements.
RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 17 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 1
AN 2002:571379 CAPLUS <<LOGINID::20060815>>
DN 137:274789
TI In vitro ***protein*** -polysaccharide conjugation: ***tyrosinase*** -catalyzed conjugation of gelatin and ***chitosan***

AU Chen, Tianhong; Embree, Heather D.; Wu, Li-Qun; Payne, Gregory F.
CS Center for Agricultural Biotechnology, University of Maryland Biotechnology Institute, College Park, MD, 20742-4450, USA
SO Biopolymers (2002), 64(6), 292-302
CODEN: BIPMAA; ISSN: 0006-3525
PB John Wiley & Sons, Inc.
DT Journal
LA English
AB The enzyme tyrosinase was used for the in vitro conjugation of the ***protein*** gelatin to the polysaccharide chitosan. Tyrosinases are oxidative enzymes that convert accessible tyrosine residues of proteins into reactive o-quinone moieties. Spectrophotometric and dissolved oxygen studies indicate that tyrosinase can oxidize gelatin and we est. that 1 in 5 gelatin chains undergo reaction. Oxidized tyrosyl residues (i.e., quinone residues) can undergo nonenzymic reactions with available nucleophiles such as the nucleophilic amino groups of chitosan. UV/visible, 1H-NMR, and ir provided chem. evidence for the conjugation of oxidized gelatin with chitosan. Phys. evidence for conjugation was provided by dynamic viscometry, which indicated that ***tyrosinase*** catalyzes the sol-to-gel conversion of gelatin/ ***chitosan*** mixts. The gels formed from tyrosinase-catalyzed reactions were obsd. to differ from gels formed by cooling gelatin. In contrast to gelatin gels, tyrosinase-generated gels had different thermal behavior and were broken by the chitosan-hydrolyzing enzyme chitosanase. These results demonstrate that tyrosinase can be exploited for the in vitro formation of ***protein*** -polysaccharide conjugates that offer interesting mech. properties.
RE.CNT 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 18 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:877979 CAPLUS <<LOGINID::20060815>>
DN 138:172168
TI Renewable resources and enzymic processes to create functional polymers: adapting materials and reactions from food processing
AU Aberg, Christopher M.; Chen, Tianhong; Payne, Gregory F.
CS Center for Biosystems Research, University of Maryland Biotechnology Institute, Baltimore, MD, 20742, USA
SO Journal of Polymers and the Environment (2002), 10(3), 77-84
CODEN: JPENFW; ISSN: 1566-2543
PB Kluwer Academic/Plenum Publishers
DT Journal
LA English
AB Materials and concepts from food science were used to create functionalized, environmentally friendly derivs. of the biopolymer chitosan, a byproduct of seafood processing. Functional groups were grafted onto chitosan using tyrosinase, the enzyme responsible for food browning. The functionalizing groups studied included low-mol.-wt. phenols derived from natural sources and high-mol.-wt. proteins. The approach of using low-mol.-wt. phenols to functionalize chitosan is illustrated with arbutin, a natural phenol found in pears. Results demonstrate that tyrosinase initiates reactions that lead to the conversion of arbutin-chitosan solns. into gels. These gels can be rapidly broken by treatment with the chitosan-hydrolyzing enzyme chitosanase, demonstrating that the chitosan derivs. remain biodegradable. Other studies, in which low-mol.-wt. natural phenols were enzymically grafted onto chitosan to confer functional properties, are briefly discussed. The creation of co-polymers is illustrated by results in which tyrosinase is used to couple gelatin onto chitosan. Gelatin is a proteinaceous byproduct of meat prodn. The tyrosinase-generated gelatin-chitosan conjugates were obsd. to offer interesting rheol. and thermal properties. These results demonstrated the potential for using renewable resources and enzymic processing to create environmentally friendly polymers with useful functional properties.
RE.CNT 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 19 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:654663 CAPLUS <<LOGINID::20060815>>
DN 135:200164
TI Preparation of chitosan encapsulated microcapsules
IN Garces Garces, Josep; Viladot Petit, Josep-Lluis
PA Primacare S.A., Spain; Cognis Ip Management GmbH
SO Eur. Pat. Appl., 18 pp.
CODEN: EPXXDW
DT Patent
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1129771	A1	20010905	EP 2000-104745	20000304
	EP 1129771	B1	20051221		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, CY				
	ES 2253147	T3	20060601	ES 2000-104745	20000304
	WO 2001066240	A1	20010913	WO 2001-EP1177	20010203
	W: AU, JP, KR, US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
	EP 1261421	A1	20021204	EP 2001-907493	20010203
	EP 1261421	B1	20051214		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
	JP 2003525917	T2	20030902	JP 2001-564884	20010203
	ES 2253352	T3	20060601	ES 2001-1907493	20010203
	WO 2001066241	A1	20010913	WO 2001-EP2069	20010223
	W: AU, JP, KR, US				
	JP 2003526640	T2	20030909	JP 2001-564885	20010223
	US 2003044469	A1	20030306	US 2002-220109	20020828
	US 2003064106	A1	20030403	US 2002-220718	20020904
PRAI	EP 2000-104745	A	20000304		
	WO 2001-EP1177	W	20010203		
	WO 2001-EP2069	W	20010223		

AB The invention concerns the prepn. of microcapsules in multiple steps, including (a) the prepn. of active substance O/W emulsions with emulsifiers and oil bodies; (b) treating the emulsions with aq. solns. of anionic polymers; (c) mixing the matrix with chitosan solns.; (d) isolating the formed microcapsules from the aq. phase. The method is used to prep. microcapsules for cosmetic, pharmaceutical and food industrial applications. Thus tocopherol was encapsulated by mixing 0.5 g Phenopip and 50 g Pemulen TR-2 soln. (2 wt./wt.%), pH 3 was formed; thereafter a mixt. of 5 g tocopherol in mineral oil and 0.5 g Plantacare APG 1200 were added; this was followed by the addn. of a 1 wt./wt.% chitosan in Hydagen CMF soln. to result a 0.01 wt./wt.% chitosan concn. in the system. The pH

was set to 5.5 with triethanolamine and the microcapsules were decanted. The prepd. microcapsules were used as a 1 wt./wt.% ingredient in a hair rinse compn. that further contained (wt./wt.%): Dehyquart A 2.0; Dehyquart L80 1.2; Eumulgin B2 0.8; Lanette O 2.5; Cutina GMS 0.5; Cetiol HE 1.0; Hydagen CMF 1.0; preservative, water to 100.

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 20 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 2
AN 2001:298449 CAPLUS <<LOGINID::20060815>>
DN 134:350231
TI Combinatorial screening for enzyme-mediated coupling. ***Tyrosinase*** -catalyzed coupling to create ***protein*** - ***chitosan*** conjugates
AU Chen, Tianhong; Vazquez-Duhalt, Rafael; Wu, Chi-Fang; Bentley, William E.; Payne, Gregory F.
CS Center for Agricultural Biotechnology, University of Maryland Biotechnology Institute, College Park, MD, 20742, USA
SO Biomacromolecules (2001), 2(2), 456-462
CODEN: BOMAF6; ISSN: 1525-7797
PB American Chemical Society
DT Journal
LA English
AB In nature, tyrosinase-generated o-quinones are commonly involved in processes that lead to functional biomaterials. These biomaterials are chem. complex and have been difficult to analyze. Furthermore, the cascade of reactions involving o-quinones is poorly understood, and it has been difficult to mimic ex vivo for materials processing. We report the use of a combinatorial approach to learn how tyrosinase and low mol. wt. phenolic precursors can be used to generate biol. active protein-polysaccharide conjugates. Specifically, we screened various phenolic coupling precursors and various reaction conditions for the coupling of proteins onto the polysaccharide chitosan. Several natural phenols were identified as appropriate precursors for the coupling of polyhistidine tagged organophosphorus hydrolase (His-OPH) onto chitosan films. OPH activity was retained upon coupling and subsequent studies indicated that the histidine tag was not necessary for coupling. Using conditions identified for His-OPH coupling, we obsd. that various biol. active proteins (cytochrome c, OPH, and His-CAT) could be coupled onto chitosan films. The glycosylated protein horseradish peroxidase was not effectively coupled onto chitosan under the conditions studied. In all cases studied, we obsd. that coupling required a phenolic precursor, suggesting that tyrosinase is unable to couple by reaction with surface tyrosyl residues of the target protein. In conclusion, this study illustrates a combinatorial approach for the "discovery" of conditions to couple biol. active proteins onto chitosan through natural, quinone-based processes.

RE.CNT 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 21 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:798541 CAPLUS <<LOGINID::20060815>>
TI Grafting renewable chemicals to functionalize chitosan.
AU Payne, Gregory F.; Vachoud, Laurent; Chen, Tianhong; Govar, Justin
CS Center for Agricultural Biotechnology, University of Maryland, College Park, MD, 20742-4450, USA
SO Abstracts of Papers, 220th ACS National Meeting, Washington, DC, United States, August 20-24, 2000 (2000) POLY-439
CODEN: 69FZC3
PB American Chemical Society
DT Journal; Meeting Abstract
LA English
AB We are examg. how enzymes can be used to graft renewable chems. onto biopolymers to create functional materials. Specifically, we will report on the use of the enzyme ***tyrosinase*** to functionalize ***chitosan*** . Tyrosinase is able to react with a diverse range of low-mol. wt. phenolics including gallic acid and their ester derivs. When long chain esters of gallic acid were enzymically grafted, the chitosan surface was obsd. to become hydrophobic. Tyrosinase is also capable of reacting with the tyrosine residues of peptides and proteins. When defined peptides and ***protein*** hydrolyzates were enzymically grafted onto chitosan, the graft polymers were obsd. to offer high viscosities and shear thinning properties.

L3 ANSWER 22 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 3
AN 1997:404480 CAPLUS <<LOGINID::20060815>>
DN 127:106507
TI Regulation of attachment, germination, and appressorium formation by zoospores of Lagenidium giganteum and related oomycetes by chitin, chitosan, and catecholamines
AU Petersen, E. E.; Semon, M. J.; Kerwin, J. L.; Brower, J. M.
CS Botany Department, University of Washington, Seattle, WA, 98195, USA
SO Protoplasma (1997), 197(1-2), 96-110
CODEN: PROTA5; ISSN: 0033-183X
PB Springer
DT Journal
LA English
AB L. giganteum (Oomycetes: Lagenidiales), a facultative parasite of mosquito larvae, infects the larval stage of most spp. of mosquitoes and a very limited no. of alternate hosts. Host infection by this and other members of Oomycetes is initiated by motile, laterally biflagellate zoospores. Chem. bases for the various degrees of host specificity exhibited by these parasites is not known, but presumably involves receptors on the zoospore surface recognizing compds. either secreted by or on the surface of their hosts. Surface topog. had no detectable effect on L. giganteum encystment or appressorium formation. SEM documented the detachment of flagella during zoospore encystment. Bulbous knobs at the basal end of the detached flagellum were interpreted as encysting zoospores dropping the axoneme and/or the basal body and assocd. structures to which flagella are attached. Multiple signals appear to be involved in the initial steps of L. giganteum host invasion. Zoospores of this parasite did not encyst on powd. prepns. of chitin or chitosan (deacetylated chitin). Upon dissoln. of chitosan in dil. acid followed by drying these solns. to form thin, transparent films, zoospores readily encysted. The degree of reacetylation of these films and the spacing of acetylated and deacetylated residues had no significant effect on zoospore encystment. Zoospores of a strain of Lagenidium myophilum isolated from marine shrimp, that also infects mosquito larvae, encysted on chitosan films. No encystment of spores of the plant parasite Phytophthora capsici was obsd. on chitin or chitosan films. Simulation of cuticle sclerotization by incubating ***chitosan*** films with different catecholamines and ***tyrosinase*** significantly reduced zoospore encystment. Zoospores that encysted on chitosan films did not germinate in distd. water. Germination could be induced by adding microgram quantities of bovine serum albumin or proteins secreted by motile zoospores into the water, and

to a lesser degree by some amino acids, but not by various cations. Zoospores encysted and germinated on the pupal stage of some mosquito spp. Appressoria were occasionally formed, but most subsequently sent out another mycelial branch, apparently without attempting to pierce the pupal cuticle. Methylation of pupal exuviae with ethereal diazomethane or MeOH/HCl significantly increased zoospore encystment. Modification of chitin by catecholamines, lipids, and ***protein*** on the epicuticular larval surface all affected host invasion.
RE.CNT 76 THERE ARE 76 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 23 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1991:467708 CAPLUS <<LOGINID::20060815>>
DN 115:67708
TI Chitin-chitosan membranes: separations of amino acids and polypeptides
AU Pellegrino, John J.; Geer, Stuart; Maegley, Karen; Rivera, Raphael; Steward, Darlene; Ko, Myong
CS Chem. Eng. Sci. Div., Natl. Inst. Stand Technol., Boulder, CO, 80303, USA
SO Annals of the New York Academy of Sciences (1990), 589(Biochem. Eng. 6), 229-44
CODEN: ANYAA9; ISSN: 0077-8923
DT Journal
LA English
AB Chitosan films made from com. polymer sources allow permeation of amino acids with fluxes of 1-10 nmol/(cm2.cntdot.s) under millimolar concn. patients. There are size, charge, and mol. interactions between the amino acids and the chitosan repeat structure. The sorption of amino acids in ***chitosan*** does not show satn. behavior, and arom. amino acids, esp. ***tyrosine*** and tryptophan, show the greatest affinity. A gel chitosan membrane, made via controlled crosslinking, allowed permeation of a 141,000 dalton ***protein*** under the concn. gradient alone.

=> d his

(FILE 'HOME' ENTERED AT 17:46:27 ON 15 AUG 2006)

FILE 'CAPLUS, BIOSIS' ENTERED AT 17:46:42 ON 15 AUG 2006
L1 138 S CHITOSAN (10A) TYROSIN?
L2 26 S L1 (P) PROTEIN
L3 23 DUP REM L2 (3 DUPLICATES REMOVED)

=> log h

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	68.58	68.79
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	-15.00	-15.00

SESSION WILL BE HELD FOR 60 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 17:47:51 ON 15 AUG 2006

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$$^STN;HighlightOn=  ***;HighlightOff=***  ;
=> d his

     (FILE 'HOME' ENTERED AT 17:46:27 ON 15 AUG 2006)

     FILE 'CAPLUS, BIOSIS' ENTERED AT 17:46:42 ON 15 AUG 2006
L1           138 S CHITOSAN (10A) TYROSIN?
L2            26 S L1 (P) PROTEIN
L3            23 DUP REM L2 (3 DUPLICATES REMOVED)

     FILE 'CAPLUS, BIOSIS' ENTERED AT 18:17:13 ON 15 AUG 2006
L4           298 S CHITOSAN (P) (PROTEIN OR POLYPEPTIDE) (P) (CONJUGAT? OR COMPL
L5            24 S L4 AND TYROSIN?
L6            20 DUP REM L5 (4 DUPLICATES REMOVED)
L7            10 S L6 NOT L3

=> s 17
L8            10 L7

=> d l8 bib ab 1-10

L8   ANSWER 1 OF 10  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2006:378708  CAPLUS <<LOGINID::20060815>>
TI     ***Tyrosine***  -based "activatable pro-tag": enzyme-catalyzed protein
     capture and release
AU   Lewandowski, Angela T.; Small, David A.; Chen, Tianhong; Payne, Gregory
     F.; Bentley, William E.
CS   Center for Biosystems Research, University of Maryland Biotechnology
     Institute, College Park, MD, 20742, USA
SO   Biotechnology and Bioengineering (2006), 93(6), 1207-1215
     CODEN: BIBIAU; ISSN: 0006-3592
PB   John Wiley & Sons, Inc.
DT   Journal
LA   English
AB     ***Protein***  recovery is often achieved by a series of capture and
     release steps that often involve chromatog. binding and elution.  We
     report an alternative, non-chromatog., capture and release approach that
     employs enzymes and the stimuli-responsive polysaccharide  ***chitosan***
     .  We capture our  ***protein***  using the enzyme  ***tyrosinase***
     that oxidizes accessible  ***tyrosine***  residues of the
       ***protein***  and "activates" these residues for covalent capture
(i.e.,
       ***conjugation***  ) onto  ***chitosan***  .  Using fusions of green
     fluorescent  ***protein***  (GFP) we obsd. that: (i) enzymic activation
     is required for  ***protein***  capture to  ***chitosan***  ; and (ii)
     capture is enhanced (approx. five-fold) by engineering the  ***protein***
     to have a penta-  ***tyrosine***  fusion tag that provides addnl.
     accessible  ***tyrosine***  residues for enzymic activation.  Because
     the fusion tag appears to be the primary site for capture, and capture
     requires activation, we designate penta-  ***tyrosine***  as a
     "pro-tag.".  The captured GFP-  ***chitosan***  ***conjugate***
     possesses the pH-responsive soly. that is characteristic of
       ***chitosan***  .  We exploit this pH-responsive soly. to facilitate
     purifn. of the captured  ***protein***  .  Two enzymic methods were
     explored to release the captured GFP from the  ***chitosan***
       ***conjugate***  .  The first method employs enterokinase (EK) to cleave
     the  ***protein***  at an engineered EK-cleavage site.  The second
     method employs chitosanase to hydrolyze the  ***chitosan***  backbone.
     Using GFP as a model  ***protein***  , we demonstrated that enzymic
     capture and release provides a simple, non-chromatog. means to recover
     proteins directly from cell lysates.
RE.CNT  24    THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD
              ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8   ANSWER 2 OF 10  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2005:982360  CAPLUS <<LOGINID::20060815>>
DN   143:281777
TI   Photosensitizer-kinase modulator conjugates for the treatment of protein
     kinase-dependent diseases
IN   Bourre, Ludovic
PA   Fr.
SO   Fr. Demande, 26 pp.
     CODEN: FRXXBL
DT   Patent
LA   French
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
     --------------      ----   --------    -------------------    --------
PI   FR 2867189           A1    20050909    FR 2004-2408           20040308
PRAI FR 2004-2408                20040308
AB   The invention discloses compds. modulating protein kinase activity, as
     well as drugs and pharmaceutical compns. for the treatment of diseases
     dependent on protein kinase activity.  The compds. are conjugates of
     .gtoreq.1 photoactive mols. and .gtoreq.1 protein kinase modulators.  The
     compds. are useful for photochemotherapy.  Compd. prepn. is included.
RE.CNT  7     THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
              ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8   ANSWER 3 OF 10  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2004:287864  CAPLUS <<LOGINID::20060815>>
DN   140:305668
TI   Polysaccharide-based polymers and methods of making the same
IN   Chen, Tianhong; Embree, Heather D.; Brown, Eleanor M.; Taylor, Maryann M.;
     Payne, Gregory F.
PA   University of Maryland Biotechnology Institute, USA; University of
     Maryland Baltimore County
SO   PCT Int. Appl., 29 pp.
     CODEN: PIXXD2
DT   Patent
LA   English
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
     --------------      ----   --------    -------------------    --------
PI   WO 2004029096        A2    20040408    WO 2003-US30737        20030926
     WO 2004029096        A3    20041021
         W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
             CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE,
             GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK,
             LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ,
             OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,
             TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
             KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,
             FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR,
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BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

	AU 2003275289	A1	20040419	AU 2003-275289	20030926
	US 2006078962	A1	20060413	US 2005-529012	20050324
PRAI	US 2002-413917P	P	20020926		
	WO 2003-US30737	W	20030926		

AB Gels and polymers comprising a ***polypeptide*** bound to a polysaccharide are disclosed. Specific polypeptides include, but are not limited to, polypeptides that comprise glutamine or ***tyrosine*** residues. Specific polysaccharides include, but are not limited to, ***chitosan*** . Gels and polymers of the invention can be used for the in vitro and in situ formation of ***protein*** -polysaccharide ***conjugates*** . Methods of making ***polypeptide*** /polysaccharide gels and polymers are also disclosed.

L8 ANSWER 4 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:1011372 CAPLUS <<LOGINID::20060815>>
DN 140:195804
TI Thermo-biolithography: A technique for patterning nucleic acids and proteins
AU Fernandes, Rohan; Yi, Hyunmin; Wu, Li-Qun; Rubloff, Gary W.; Ghodssi, Reza; Bentley, William E.; Payne, Gregory F.
CS Center for Biosystems Research, University of Maryland Biotechnology Institute, College Park, MD, 20742, USA
SO Langmuir (2004), 20(3), 906-913
CODEN: LANGD5; ISSN: 0743-7463
PB American Chemical Society
DT Journal
LA English
AB We describe a "biolithog." technique in which the unique properties of biopolymeric materials and the selective catalytic activities of enzymes are exploited for patterning surfaces under simple and bio-friendly conditions. We begin by coating a reactive film of the polysaccharide ***chitosan*** onto an inorg. surface (glass or silicon wafer). ***Chitosan*** 's pH-responsive soly. facilitates film deposition, while the nucleophilic properties of this polysaccharide allow simple chemistries or biochemistries to be used to covalently attach species to the film. The thermally responsive ***protein*** gelatin is then cast on top of the ***chitosan*** film, and the gelatin gel serves as a sacrificial "thermoresist". Pattern transfer is accomplished by applying a heated stamp to melt specific regions of the gelatin thermoresist and selectively expose the underlying ***chitosan*** . Finally, mols. are ***conjugated*** to the exposed ***chitosan*** sublayer and the sacrificial gelatin layer is removed (either by treating with warm water or protease). To demonstrate the concept, we patterned a reactive dye (NHS-fluorescein), a model 20-base oligonucleotide (using std. glutaraldehyde coupling chemistries), and a model green fluorescent ***protein*** (using ***tyrosinase*** -initiated ***conjugation***). Because gelatin can be applied and removed under mild conditions, sequential thermo-biolithog. steps can be performed without destroying previously patterned biomacromols. These studies represent the first step toward exploiting nature's exquisite specificity for lithog. patterning.
RE.CNT 47 THERE ARE 47 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 5 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:779476 CAPLUS <<LOGINID::20060815>>
DN 139:361162
TI Nature-inspired creation of protein-polysaccharide conjugate and its subsequent assembly onto a patterned surface
AU Chen, Tianhong; Small, David A.; Wu, Li-Qun; Rubloff, Gary W.; Ghodssi, Reza; Vazquez-Duhalt, Rafael; Bentley, William E.; Payne, Gregory F.
CS Center for Biosystems Research, University of Maryland Biotechnology Institute, College Park, MD, 20742, USA
SO Langmuir (2003), 19(22), 9382-9386
CODEN: LANGD5; ISSN: 0743-7463
PB American Chemical Society
DT Journal
LA English
AB A ***protein*** 's functional properties can be adjusted by ***conjugating*** it to other polymers. We used a nature-inspired route to create a ***protein*** -polysaccharide ***conjugate*** and examd. the properties of this ***conjugate*** . Specifically, the enzyme ***tyrosinase*** was used to oxidize accessible ***tyrosine*** residues of the model ***protein*** green fluorescent ***protein*** (GFP). Oxidn. yields quinone residues that are "activated" for the covalent ***conjugation*** of GFP to nucleophilic groups of the aminopolysaccharide ***chitosan*** . ***Conjugation*** to ***chitosan*** conferred distinct properties to GFP. The GFP- ***chitosan*** ***conjugate*** was obsd. to have pH-responsive, "smart" properties, and GFP could be ***conjugated*** onto a gel matrix. Addnl., the GFP- ***chitosan*** ***conjugate*** can be selectively deposited onto a micropatterned surface in response to an applied voltage. This nature-inspired method provides a simple and safe method to ***conjugate*** proteins to ***chitosan*** , and these ***conjugates*** can be readily assembled onto patterned surfaces.
RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 6 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:759947 CAPLUS <<LOGINID::20060815>>
DN 140:292543
TI Enhanced DNA synthesis accompanied by constitutive phosphorylation of the ERK pathway in human fibroblasts cultured on a polyelectrolyte complex
AU Matsuda, Naoki; Horikawa, Miwa; Yoshida, Masahiro; Watanabe, Masami; Nagahata, Misao; Teramoto, Akira; Abe, Koji
CS Center for Frontier Life Sciences, Nagasaki University, Nagasaki, 852-8523, Japan
SO Biomaterials (2003), 24(26), 4771-4776
CODEN: BIMADU; ISSN: 0142-9612
PB Elsevier Science Ltd.
DT Journal
LA English
AB In this study, the authors examd. the cellular and mol. responses of fibroblasts cultured on a polyelectrolyte ***complex*** (PEC) derived from sulfated chitin as a polyanion and ***chitosan*** as a polycation. On PEC-coated dishes, the fibroblasts aggregated and then developed spheroid-like structures. At earlier stages of culture, DNA synthesis of cells cultured on PEC was stimulated approx. 75% higher than control cells. Among various signaling mols. examd., including mitogen-activated ***protein*** kinases, Akt/PKB and p53, an extracellular-signal-regulated kinase (ERK) was selectively and constitutively phosphorylated in cells cultured on PEC. The constitutive

phosphorylation of ERK was derived from an activation of the ERK kinase MEK, but not from an inactivation of the ERK phosphatase MKP-1. Furthermore, ERK phosphorylation was almost abolished by a membrane receptor ***tyrosine*** kinase inhibitor. The enhanced phosphorylation of focal adhesion kinase, a downstream mol. of integrins, was also obsd. in cells cultured on PEC. These results suggest that fibroblasts recognize PEC as a continuous mitogenic stimulant which results in the constitutive activation of the MEK-ERK pathway toward mitogenesis. Further, PEC interacts with the cell membrane leading to activation of membrane mols., including integrins and receptor ***tyrosine*** kinases. These responses may account, at least in part, for the potential use of PEC as a biomaterial for tissue regeneration.

RE.CNT 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 7 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:185823 CAPLUS <<LOGINID::20060815>>
TI Nature-inspired method for protein-polysaccharide conjugation
AU Chen, Tianhong; Small, David A.; Bentley, W. E.; Payne, Gregory F.
CS Center for Biosystems Research, University of Maryland Biotechnology Institute, College Park, MD, 20742-4450, USA
SO Abstracts of Papers, 225th ACS National Meeting, New Orleans, LA, United States, March 23-27, 2003 (2003), PMSE-024 Publisher: American Chemical Society, Washington, D. C.
CODEN: 69DSA4
DT Conference; Meeting Abstract
LA English
AB ***Protein*** -polysaccharide ***conjugates*** confer important mech. properties to natural materials. The in vitro synthesis of ***protein*** -polysaccharide ***conjugates*** is difficult because of the complexity of biosynthetic pathways and the need for protection/deprotection steps when chem. routes are used. We have been studying an alternative, nature-inspired method for ***protein*** -polysaccharide ***conjugation*** . This method relies on the use of ***tyrosinase*** to catalyze the oxidn. of ***tyrosine*** resides of proteins into reactive o-quinone residues. Once an accessible ***tyrosine*** residue has been "activated " , the ***protein*** can be coupled to the amine-contg. polysaccharide ***chitosan*** through un-catalyzed ***conjugation*** reactions. We use this approach to ***conjugate*** gelatin to ***chitosan*** to create a biopolymer hydrogel that offers unique phys. properties. Specifically the gelatin-***chitosan*** gels have thermally responsive mech. properties and a defined lifetime. Addnl., ***tyrosinase*** was used to generate ***conjugates*** between green fluorescent ***protein*** (GFP) and ***chitosan*** . The GFP- ***chitosan*** ***conjugate*** is obsd. to have pH-responsive properties. In sum, ***tyrosinase*** provides a novel approach to generate ***protein*** -polysaccharide ***conjugates*** with unique functional properties.

L8 ANSWER 8 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:191806 CAPLUS <<LOGINID::20060815>>
TI In vitro biochemical coupling to create protein-polysaccharide conjugates
AU Payne, Gregory F.; Chen, Tianhong; Embree, Heather D.
CS Center for Agricultural Biotechnology, University of Maryland, College Park, MD, 20742-4450, USA
SO Abstracts of Papers, 223rd ACS National Meeting, Orlando, FL, United States, April 7-11, 2002 (2002), PMSE-222 Publisher: American Chemical Society, Washington, D. C.
CODEN: 69CKQP
DT Conference; Meeting Abstract
LA English
AB ***Protein*** -polysaccharide ***conjugates*** are known to confer distinctive mech. properties to biol. materials. However, the recovery or synthesis of such glyco- ***conjugates*** is problematic. We examd. a biochem. method to couple the ***protein*** , gelatin, to the polysaccharide, ***chitosan*** . Both gelatin and ***chitosan*** are byproducts of food-processing operations. The biochem. coupling method involves the oxidative enzyme ***tyrosinase*** which converts ***tyrosine*** residues of gelatin into quinone residues. These quinone residues are reactive and can undergo grafting reactions with ***chitosan*** 's amino groups. ***Tyrosinase*** -catalyzed coupling leads to dramatic changes in rheol. behavior. A combinatorial screening is currently being implemented to understand how the properties of the gelatin- ***chitosan*** ***conjugates*** are altered by coupling.

L8 ANSWER 9 OF 10 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
AN 2003:546041 BIOSIS <<LOGINID::20060815>>
DN PREV200300548225
TI Amino acid-residue-specific enzymes for protein grafting and crosslinking.
AU Payne, Gregory F. [Reprint Author]; Chen, Tianhong [Reprint Author]; McDermott, Martin K.; Small, David A.; Bentley, William E. [Reprint Author]
CS Center for Biosystems Research, University of Maryland Biotechnology Institute, 6134 Plant Sciences Building, College Park, MD, 20742-4450, USA
payne@umbi.umd.edu
SO Abstracts of Papers American Chemical Society, (2003) Vol. 226, No. 1-2, pp. POLY 471. print.
Meeting Info.: 226th ACS (American Chemical Society) National Meeting. New York, NY, USA. September 07-11, 2003. American Chemical Society.
ISSN: 0065-7727 (ISSN print).
DT Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LA English
ED Entered STN: 19 Nov 2003
Last Updated on STN: 19 Nov 2003

L8 ANSWER 10 OF 10 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
AN 2003:424531 BIOSIS <<LOGINID::20060815>>
DN PREV200300424531
TI Nature-inspired method for protein-polysaccharide conjugation.
AU Chen, Tianhong [Reprint Author]; Small, David A.; Bentley, W. E.; Payne, Gregory F. [Reprint Author]
CS Center for Biosystems Research, University of Maryland Biotechnology Institute, College Park, MD, 20742-4450, USA
chent@umbi.umd.edu
SO Abstracts of Papers American Chemical Society, (2003) Vol. 225, No. 1-2, pp. PMSE 24. print.
Meeting Info.: 225th American Chemical Society (ACS) National Meeting. New Orleans, LA, USA. March 23-27, 2003. American Chemical Society.

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     ISSN: 0065-7727 (ISSN print).
DT   Conference; (Meeting)
     Conference; Abstract; (Meeting Abstract)
LA   English
ED   Entered STN: 17 Sep 2003
     Last Updated on STN: 17 Sep 2003


=> d his

     (FILE 'HOME' ENTERED AT 17:46:27 ON 15 AUG 2006)

     FILE 'CAPLUS, BIOSIS' ENTERED AT 17:46:42 ON 15 AUG 2006
L1          138 S CHITOSAN (10A) TYROSIN?
L2           26 S L1 (P) PROTEIN
L3           23 DUP REM L2 (3 DUPLICATES REMOVED)

     FILE 'CAPLUS, BIOSIS' ENTERED AT 18:17:13 ON 15 AUG 2006
L4          298 S CHITOSAN (P) (PROTEIN OR POLYPEPTIDE) (P) (CONJUGAT? OR COMPL
L5           24 S L4 AND TYROSIN?
L6           20 DUP REM L5 (4 DUPLICATES REMOVED)
L7           10 S L6 NOT L3
L8           10 S L7

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